

# Efficacy and Feasibility of a Therapist-Guided Internet-Based Intervention for Older Persons with Childhood Traumatization: A Randomized Controlled Trial

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**Objective:** *Although cognitive-behavioral treatment approaches for post-traumatic stress disorder (PTSD) exist, only a small proportion of older adults seeks psychological treatment. Alternative treatment approaches are thus needed to fill the gap between provision and use of psychological interventions. This study aimed to investigate the efficacy and feasibility of an Internet-based, therapist-guided cognitive-behavioral therapy (Internet-based CBT) for older individuals with PTSD symptoms. Methods:* Patients with clinically meaningful (i.e., subsyndromal or greater) PTSD symptoms were randomly assigned to a 6-week treatment group of therapist-guided Internet-based CBT (N = 47; treatment group) or a wait-list group (N = 47; WL). The treatment group was assessed pre- and post-treatment as well as at 3-, 6- and 12-month follow-ups. **Results:** *Linear mixed-effects analyses showed a significant interaction between group (treatment versus WL) and time (pre versus post) for PTSD symptoms with a moderate between-group effect size in favor of the treatment group (d = 0.42). Effects in the treatment group were maintained up to the 12-month follow-up. Findings indicate a significant interaction (group × time) for quality of life (d = 0.39) and self-efficacy (d = 0.38). With regard to the feasibility, attrition rate was very low in both groups (treatment group: 12.8%, WL: 6.4%) and working alliance was very high. Conclusions:* Results suggest that therapist-guided Internet-based CBT is associated with a substantial reduction in PTSD symptoms, and increase in resource-related variables in older adults with (subsyndromal) PTSD.

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<http://dx.doi.org/10.1016/j.jagp.2017.02.024>

*This Internet-based intervention may offer a promising option in a stepped-care approach for older trauma-affected persons who may otherwise not pursue mental health treatment. (Am J Geriatr Psychiatry 2017; 25:878-888)*

**Key Words:** Elderly, trauma, PTSD, web-based intervention, randomized controlled trial, treatment outcome

Post-traumatic stress disorder (PTSD) is a major health issue among older adults. Epidemiologic studies have found that PTSD lifetime prevalence range between 2.5% and 4.5% in older adults,<sup>1-3</sup> whereas partial/subsyndromal PTSD in older adults is more prevalent, ranging from 5.5% to 13.1%.<sup>4-6</sup> In high-risk populations such as older adults with childhood traumatic events, rates of PTSD are much higher (e.g., 26.3% in older adults with a childhood traumatic event of indentured child labor;<sup>7</sup> 52.8% in survivors of childhood institutional abuse<sup>8</sup>). PTSD and subsyndromal PTSD in older adults are associated with severe comorbid mental (e.g., mood, anxiety and personality disorders<sup>5</sup>) and somatic problems (e.g., gastrointestinal disease, autoimmune disease<sup>9</sup>).

Despite the prevalent and often disabling impact of PTSD on older adults, only a small proportion of older adults seek psychological treatment.<sup>10,11</sup> Further, to date, only a few empirical treatment studies for older adults with PTSD have been conducted, indicating preliminary evidence that CBT techniques such as exposure and cognitive restructuring are applicable and effective for the treatment of older adults.<sup>12</sup> Numerous aspects may impede the provision of psychotherapy to this age cohort, such as a lack of perceived need for mental health services in older adults,<sup>13</sup> perceived age gap between therapist and patient, and mobility and transportation limitations.

In recent years, Internet-based treatment approaches were found to be an alternative method of delivering psychological treatment. Delivering psychotherapy online may help to overcome some of the treatment barriers because of independence of location and time as well as the visual anonymity. With regard to the treatment of PTSD, there is promising initial evidence for the efficacy of Internet-based cognitive-behavioral therapy (Internet-based CBT) in reducing PTSD symptoms.<sup>14</sup> For older adults specifically, however, only a few Internet-based CBT studies have been conducted to date; they have targeted

depression,<sup>15,16</sup> anxiety,<sup>17,18</sup> and PTSD.<sup>19</sup> All of these Internet-based approaches provided short-term cognitive-behavioral interventions and found a decrease in the main outcomes, which remained stable in the follow-up assessments. Although encouraging, the overall empirical base for PTSD treatment studies in older adults in general and specifically for Internet-based CBT is nascent. Additional, well-powered randomized controlled trials (RCTs) are needed to further evaluate the efficacy of these approaches in older persons.

To address this gap, we developed an Internet-based CBT called Integrative Testimonial Therapy (Integrative TT) specifically for older individuals with recent PTSD symptoms who were traumatized in childhood. To control for time of traumatization in the life span (i.e., during early childhood and adolescents) and also for type of trauma (i.e., man-made traumatic events such as air raids, forced displacement, killing of family members, experiencing forced separation from the family, being exposed to shootings, wartime rape), participants with a shared historical background (i.e., traumatization during World War II in Germany) were recruited initially. Integrative TT combined evidence-based psychotherapeutic components of exposure and cognitive reconstruction with age-specific treatment techniques (i.e., life review). It is a writing-based, exclusively Internet-delivered therapist-guided intervention. Results of a pilot study on the feasibility suggest that Integrative TT seems to be well accepted and a potentially effective treatment for older war trauma survivors experiencing PTSD symptoms.<sup>19</sup>

The purpose of the current study was to investigate the long-term efficacy of Integrative TT for older individuals traumatized in early childhood with clinically meaningful PTSD symptoms using a RCT design. The primary aim of this trial was to investigate the efficacy of Integrative TT in treating PTSD symptoms compared with a waitlist control group. The secondary aim is to investigate whether Integrative TT

produces a decrease of potential comorbid symptoms (i.e., anxiety and depression) and an increase of resource-oriented variables (i.e., quality of life, self-efficacy). We additionally evaluate the feasibility (i.e., dropout rate and treatment satisfaction) of Integrative TT.

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## **METHODS**

### **Participants**

Participants were recruited through primary care practices, referrals from clinicians, and radio, newspaper, and an open access Web site.

To be included, participants had to: 1) have experienced a traumatic event as a child or adolescent during World War II that met the criterion A for PTSD as specified in DSM-IV<sup>20</sup> (i.e., war traumatization); 2) report at least a subsyndromal level of PTSD symptoms (participants met Criterion B and either Criterion C or D<sup>21</sup>); 3) be able to understand and write texts in German. Applicants were excluded if they met any of the following criteria: 1) severe depression (i.e., Brief Symptom Inventory-18 [BSI-18] depression score >3); 2) suicide risk (i.e., participant who indicated suicidal ideation on the BSI-18 was given a call to examine suicide risk using Suicide Risk Assessment<sup>22</sup>); 3) abuse of drugs or alcohol; and 4) receive psychological treatment elsewhere simultaneously.

Between May 2008 and May 2012, a total of 333 interested people were assessed for eligibility. Of these, 94 met inclusion criteria and were randomly assigned to the treatment group (treatment group, N = 47) or the waitlist control group (WL, N = 47). See [Figure 1](#) for a flow of the participants through the trial.

### **Recruitment**

Participants were directed to the Web site of the Integrative Testimonial Therapy ([www.lebenstagebuch.de](http://www.lebenstagebuch.de) [Diary of life]), which provided information about a) posttraumatic stress reactions; b) the study and its inclusion criteria; c) the treatment approach; d) other treatment alternatives; and e) information about institutional affiliations and application process for the no-cost treatment. Interested individuals were then able to apply for treatment with a short e-mail notice and received an individual access code to enter the

Web-based screening questionnaires. Those who met eligibility criteria gave their informed consent and were assigned to an individual therapist. Participants who were excluded from the study were provided with information on where they could receive treatment elsewhere.

The study was designed as a RCT with two groups (treatment group and waitlist control group). Participants meeting all inclusion criteria and providing informed consent were randomly assigned to either treatment or waitlist control group. Randomization (1:1) was performed using a true random-number generator (randomization was based on a computer-generated randomization list).

For ethical reasons, the control group received treatment after a delay of 6 weeks (duration of the treatment) and an additional assessment.

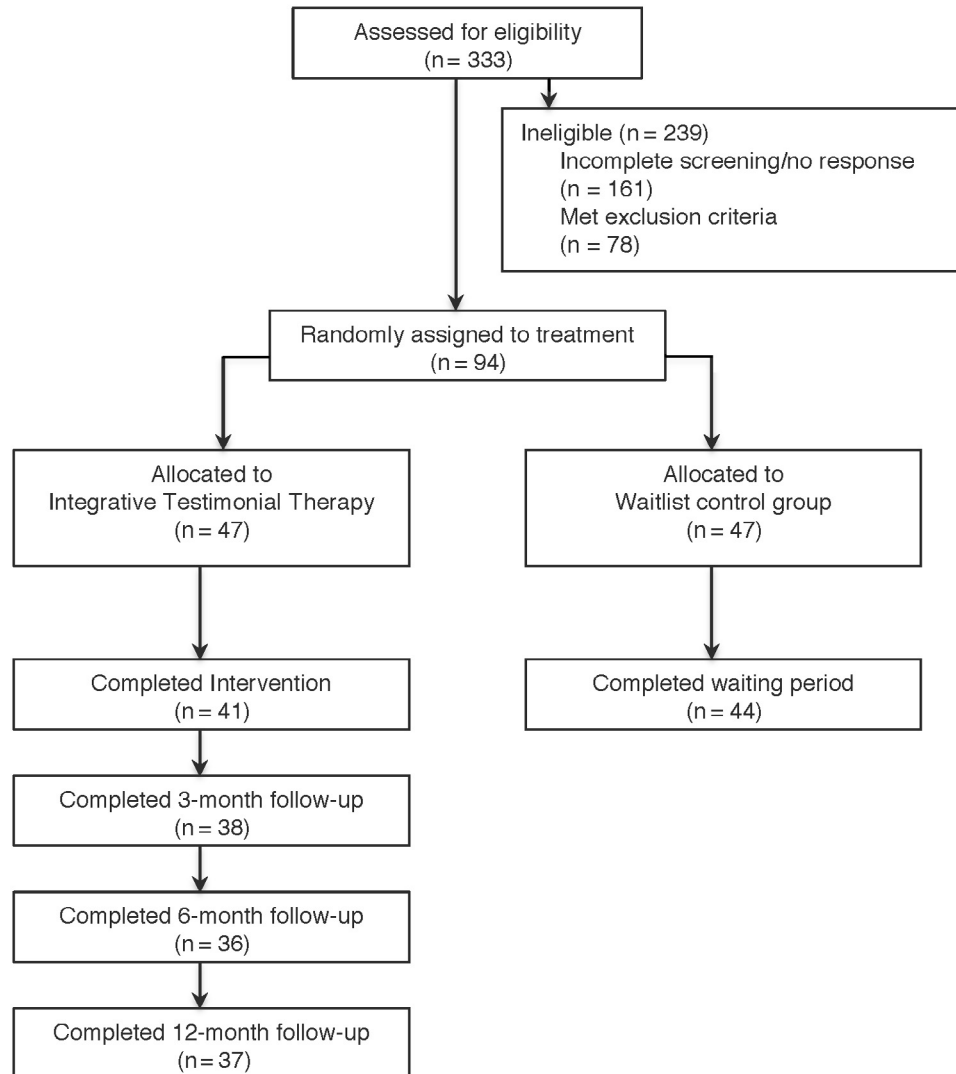
The study was approved by the ethics committee of the University of Greifswald (Germany) and was registered in the Australian New Zealand Clinical Trials Registry (ACTRN12608000259347).

### **Treatment**

Treatment consisted of structured writing assignments that were facilitated through a secured Web-based platform. Therapists and participants communicated asynchronously, that is, study participants writing and uploading their texts within a secure Web portal and study therapists providing feedback subsequently within 24 hours. Therapy delivery instructions were based on a disorder-specific CBT manual that was developed for the purpose of the study.<sup>19</sup> In total, therapists wrote 10 texts including manualized text modules as well as individual feedback. Each therapeutic feedback took on average 45 to 50 minutes. All therapists were licensed clinical psychologists who received special training (for 5 days) in the application of Integrative TT, as well as weekly supervision.

Participants were asked to complete two 45-minute writing assignments per week over a six-week period (11 essays in total). The therapy consisted of three treatment modules: 1) resource-oriented biographical reconstruction; 2) moderated exposure; and 3) cognitive reconstruction. Integrative TT combines elements of CBT (exposure and cognitive reconstruction; e.g., as in *Interapy*<sup>24</sup>) and of the narrative approach.<sup>23</sup> A

FIGURE 1. Participant flow through the study.



detailed description of the treatment protocol has already been published.<sup>19</sup>

### Assessments

Web-based self-report questionnaires were used to determine whether or not applicants were enrolled in the trial. Assessments for the treatment group were conducted at five timepoints: pre-treatment, post-treatment, and at 3-month, 6-month and 12-month follow-ups. The waitlist control group was assessed twice: baseline and at 6-week follow-up.

### Primary Outcome

Post-traumatic stress disorder symptoms were assessed using the Post-traumatic Stress Diagnostic Scale (PDS<sup>25,26</sup>). The PDS assessed potential traumatic events and was extended for the current study by a list of war-specific experiences (e.g., flight). Furthermore, PDS assessed current PTSD symptoms corresponding to DSM-IV criteria. The scale's 17 items assess the frequency of symptoms over the past month on a 4-point scale (0 = never, 3 = nearly always). The severity score ranges from 0 to 51 (symptom severity score: 1–10

“mild”; 11–20 “moderate”; 21–35 “moderate to severe” and >36 “severe”). The PDS has demonstrated good validity and reliability for assessing PTSD.<sup>26</sup>

### *Secondary Outcomes*

Depression and anxiety symptoms were assessed using the subscales of the reliable and valid Brief Symptom Inventory-18 (BSI-18<sup>27</sup>) consisting of three subscales (depression, anxiety, somatization). The subscales consist of six items each of which were rated on a 5-point Likert scale (0 = not at all, 4 = extremely).

Perceived self-efficacy was assessed using the General Self-Efficacy Scale (GSE<sup>28</sup>), which has been shown to have good psychometric properties.<sup>29</sup> Responses on the 10-item scale are given on a 4-point Likert scale (1 = not at all true, 4 = exactly true).

The EUROHIS-QOL 8-item index (EUROHIS<sup>30</sup>) assesses quality of life in different domains. Responses are given on a 5-point Likert scale (1 = not at all, 5 = completely). The index shows a satisfactory convergent and discriminant consistency as well as a significant cross-cultural variation.<sup>30</sup>

### *Working Alliance and Treatment Satisfaction*

The Working Alliance Inventory-Short (WAI-S<sup>31</sup>) is a 12-item questionnaire consisting of three subscales assessing primary components of the working alliance (task, goal, bond) and was assessed at the end of the treatment. Items were scored on a 7-point Likert scale (1 = never, 7 = always). To assess treatment satisfaction, participants were also asked to rate on a 7-point scale (1 = never, 7 = always): 1) how valued and motivated they felt by the therapist; 2) how easy it was dealing actively with problems due to visual anonymity (i.e., “Because I do not see my therapist, it is easy for me to disclose my problems”); and 3) how much they felt understood. These questions were developed by the authors.

### **Statistical Analysis**

Descriptive statistics were used to summarize demographic and clinical data as well as treatment satisfaction. Baseline group differences in demographic and clinical characteristics were investigated using  $\chi^2$  and t tests.

Linear mixed-effects analyses were conducted to evaluate the effect of treatment on study outcome measures. Treatment (Integrative TT versus wait-list control), time (baseline, post-treatment, and 3-, 6-, and 12-month follow-ups), and the interaction of treatment  $\times$  time were entered as fixed factors, subject as a random factor, and PDS, BSI-18, EUROHIS, and GSE scores as dependent variables in separate analyses. Linear mixed-model approaches were used for the ability to control for bias and handle missing data as well as to allow time points to vary (e.g., 3-month, 6-month and 12-month follow-up). To test changes of effects at 3-, 6- and 12-month follow-up, 95% confidence intervals (CIs) of estimated means were compared indicating a significant change (i.e.,  $p < 0.05$ ) by non-overlapping CIs. Effect sizes were calculated using Cohen’s d for changes within the treatment group and between treatment group and WL. By Cohen’s widely accepted standards, an effect size  $d = 0.20$  for treatment effects is considered small,  $d = 0.50$  is considered medium, and  $d = 0.80$  is considered large.<sup>32</sup> In addition, confidence intervals were assessed for the between-group effect size. Data were analysed using IBM SPSS Statistics for Mac, version 22 (Armonk, NY).

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## **RESULTS**

### **Participants**

Participants were mainly female (64.9%,  $N = 61$ ) and aged between 63 and 85 years (mean: 71.4 years, SD: 4.7 years). The mean PDS total score for all participants was 22.3 (SD: 8.4), indicating a moderate-to-severe symptom severity. Table 1 presents baseline sample characteristics. At baseline, there were no significant differences between the groups except for marital status ( $\chi^2_{(3)} = 13.61$ ,  $p = 0.003$ ). The ratio of men and women was slightly unbalanced ( $\chi^2_{(1)} = 3.78$ ,  $p = 0.052$ ).

### **Attrition**

The overall attrition rate of the 94 participants was 9.6%. Of the 47 participants who started the treatment (treatment group), 41 completed the intervention and the post-treatment assessment (attrition rate: 12.8%). The six participants who dropped out all stopped writing in the first treatment phase. Attrition

TABLE 1. Sample Characteristics

	Treatment Group (N = 47)		Waiting List (N = 47)		Statistics
	N (%)	M (SD)	N (%)	M (SD)	
Age, years		70.89 (4.97)		71.91 (4.48)	$t_{(92)} = -1.05, p = 0.29$
Female	35 (74.5)		26 (55.3)		$\chi^2_{(1)} = 3.78, p = 0.052$
Marital status					$\chi^2_{(3)} = 13.61, p = 0.003$
Single	4 (8.5)		5 (10.6)		
Married/partnership	30 (42.6)		35 (74.5)		
Divorced	18 (38.3)		4 (8.5)		
Widowed	5 (10.6)		3 (6.4)		
Educational level, years		11.45 (1.65)		11.70 (1.49)	$t_{(92)} = -0.79, p = 0.43$
Time since trauma, years		65.21 (1.77)		65.36 (1.71)	$t_{(92)} = -0.42, p = 0.68$
PDS total		22.74 (9.16)		21.87 (7.63)	$t_{(92)} = 0.50, p = 0.62$
Intrusion		6.89 (3.59)		6.17 (2.86)	$t_{(92)} = 1.08, p = 0.28$
Avoidance		8.43 (4.64)		8.66 (4.65)	$t_{(92)} = -0.24, p = 0.81$
Hyperarousal		7.43 (3.73)		7.04 (3.27)	$t_{(92)} = 0.53, p = 0.59$

Notes: M = mean; SD = standard deviation; PDS = Posttraumatic Distress Scale.

rate at 12-month follow-up was 21.3% (10 participants). Of the 47 participants in the WL, 3 dropped out during the waiting period (attrition rate: 6.4%). Attrition rate did not differ significantly between both groups ( $\chi^2_{(1)} = 1.11, p = 0.29$ ).

### Efficacy of Intervention

Table 2 shows the means of the pre- and post-assessment as well as the interaction effects and effect sizes. The linear mixed-effects analyses yielded a significant medium interaction effect between group (treatment group versus WL) and time (pre versus post) for overall PDS score as well as hyperarousal and avoidance subscales, indicating that treatment group participants demonstrated significantly lower symptom levels at post-assessment than the WL. Between-group effect sizes ranged from  $d = 0.42$  to  $d = 0.54$ . Further, significant group  $\times$  time interaction effects were observed for self-efficacy (GSE) and quality of life (EUROHIS), which indicated a significantly higher increase of these resource-oriented variables in the treatment group than in the WL. Effect sizes between groups were  $d = 0.38$  and  $d = 0.39$ , respectively. For anxiety (BSI-18), depression (BSI-18), and the PDS-intrusion subscale, linear mixed-effects analyses did not yield any significant interaction effects (Table 2).

### Stability of Effects of Treatment Group

Estimated means of all follow-up measures are presented in Table 3. With regard to changes in symptom

severity from post to follow-up measurements, 95% CIs were observed indicating a significant change under the constriction of none overlapping CIs. For overall PTSD score, an overlap of the confidence intervals could be observed (post: 95% CI = [15.23–18.98]; 12-month follow-up: 95% CI = [11.97–16.55]), that is, no significant differences in the symptom scores from post-treatment to 12-month follow-up. The same nonsignificant pattern from post-treatment to 12-month follow-up was observed for avoidance (post: 95% CI = [4.96–6.90]; 12-month follow-up: 95% CI = [3.67–6.50]) and hyperarousal (post: 95% CI = [4.65–6.06]; 12-month follow-up: 95% CI = [3.94–5.99]). For intrusion, there was a significant change (i.e., a significant decrease of symptoms) from post-treatment to 12-month follow-up indicated by none overlapping 95% CIs (post: 95% CI = [5.08–6.49]; 12 month follow-up: 95% CI = [2.67–4.75]). The corresponding within effect size showed a medium effect ( $d = 0.64$ , Table 3).

Findings for the resource-oriented variables (GSE, EUROHIS), as well as for depression and anxiety (BSI-18), showed no significant changes from post-treatment to 12-month follow-up, as indicated by an overlap of all 95% CIs (GSE: post: 95% CI = [27.65–30.28]; 12-month follow-up: 95% CI = [28.55–32.33]; EUROHIS: post: 95% CI = [3.35–3.64]; 12-month follow-up: 95% CI = [3.34–3.73]; BSI depression: post: 95% CI = [6.00–1.09]; 12-month follow-up: 95% CI = [0.63–1.13]; BSI anxiety: post: 95% CI = [0.73–1.19]; 12-month follow-up: 95% CI = [0.62–1.09]). The corresponding within effect size ranges from very small to medium ( $d = 0.02$  to  $d = 0.31$ ; Table 3).

**TABLE 2. Results with Time × Group Interaction, Means, Standard Errors, and Effect Sizes**

			Pre-Treatment		Post-Treatment		$d_{within}$	Interaction (Group × Time)		$d_{between}$	95% CI for $d_{between}$
			Mean	SE	Mean	SE		F	p		
							(pre to post)	(df)		(Integrated TT vs WL)	(lower, upper)
PDS	Intrusion	Treatment	6.89	0.48	5.95	0.51	0.28	0.27	0.604	0.09	-0.31; 0.50
		WL	6.17	0.48	5.63	0.50					
	Hyperarousal	Treatment	7.43	0.49	4.55	0.51	0.85	9.98	0.002**	0.47	-0.88, -0.06
		WL	7.04	0.49	6.16	0.50					
	Avoidance	Treatment	8.43	0.67	4.66	0.70	0.81	6.49	0.012*	0.54	-0.95, -0.13
		WL	8.66	0.67	7.19	0.69					
Total	Treatment	22.75	1.29	15.19	1.35	0.84	7.55	0.007**	0.42	-0.83, 0.01	
	WL	21.87	1.29	19.02	1.34						
BSI-18	Anxiety	Treatment	1.40	0.11	.96	0.12	0.56	1.38	0.241	0.04	-0.37, 0.44
		WL	1.22	0.11	.93	0.12					
	Depression	Treatment	1.13	0.12	.84	0.12	0.36	3.53	0.062	0.36	-0.76, 0.05
		WL	1.14	0.12	1.13	0.12					
GSE	Self-Efficacy	Treatment	27.72	0.92	30.16	0.94	0.39	6.03	0.015*	0.38	-0.03, 0.78
		WL	27.62	0.91	27.77	0.94					
EUROHIS	Quality of life	Treatment	3.17	0.09	3.54	0.09	0.60	14.55	<0.001***	0.39	-0.02, 0.80
		WL	3.26	0.09	3.30	0.09					

Notes: Total N = 94, Treatment = 47, Waiting List (WL) = 47, \* p < 0.05, \*\* p < 0.01, \*\*\*p < 0.001.

PDS: Posttraumatic Diagnostic Scale; BSI-18: Brief Symptom Inventory-18; GSE: General Self-Efficacy Scale; EUROHIS: EUROHIS-Quality of life 8-item index; SE: standard error; d: Cohen's d effect size; Integrated TT: Integrated Testimonial Therapy; CI: confidence interval.

TABLE 3. Estimated Means and Standard Errors of Psychopathology and Effect Sizes For Follow-up Measures

	3-Month Follow-up			6-Month Follow-up			12-Month Follow-up					
	Mean	SE	d <sub>within</sub> (post to 3 month)	95% CI for d <sub>between</sub> (lower, upper)	Mean	SE	d <sub>within</sub> (post to 6 month)	95% CI for d <sub>between</sub> (lower, upper)	Mean	SE	d <sub>within</sub> (post to 12 month)	95% CI for d <sub>between</sub> (lower, upper)
PDS	4.70	0.23	0.47	0.05; 0.88	3.14	0.53	0.80	0.38; 1.22	3.71	0.53	0.64	0.22; 1.05
Hyperarousal	5.18	0.52	0.18	-0.59; 0.22	4.79	0.52	0.07	-0.47; 0.34	4.97	0.52	0.12	-0.53; 0.28
Avoidance	5.01	0.71	0.07	-0.48; 0.33	4.29	0.72	0.08	-0.33; 0.48	5.09	0.72	0.09	-0.49; 0.32
Total	14.93	1.38	0.03	-0.38; 0.43	12.26	1.40	0.31	-0.09; 0.72	13.81	1.39	0.15	-0.26; 0.55
BSI-18	0.93	0.12	0.04	-0.37; 0.44	0.75	0.12	0.26	-0.15; 0.66	0.86	0.12	0.12	-0.28; 0.53
Depression	0.91	0.13	0.08	-0.49; 0.32	0.67	0.13	0.20	-0.21; 0.61	0.88	0.13	0.05	-0.45; 0.36
GSE	30.69	0.95	0.08	-0.49; 0.32	30.53	0.97	0.05	-0.46; 0.35	30.45	0.96	0.05	-0.45; 0.36
EUROHIS	3.51	0.09	0.05	-0.36; 0.45	3.55	0.10	0.02	-0.42; 0.39	3.53	0.10	0.02	-0.39; 0.42

Notes: SE: standard error; d: Cohen's d effect size; CI: confidence interval; PDS: Posttraumatic Diagnostic Scale; BSI-18: Brief Symptom Inventory-18; GSE: General Self-Efficacy Scale; EUROHIS-QOL: EUROHIS-Quality of life 8-item index.

### Therapeutic Working Alliance and Treatment Satisfaction

At the end of the treatment, participants reported a high level of working alliance (WAI-S; mean: 6.2, SD: 0.7). All three subscales of the WAI-S indicated a high level of satisfaction with the therapist and the therapeutic process (task: mean: 6.2, SD: 0.8; bond: mean: 6.1, SD: 1.0; goal: mean: 6.2, SD: 0.7).

On average, participants reported feeling valued and motivated by the therapist (mean: 6.5, SD: 0.8, N = 32); found it easier to disclose their problems due to visual anonymity, i.e. due to not seeing the therapist face-to-face (mean: 5.6, SD: 1.6, N = 30) and felt that the therapist understood their problems (mean: 6.2, SD: 1.0, N = 32).

### DISCUSSION

The aim of the present study was to evaluate the efficacy and feasibility of Integrative Testimonial Therapy, an Internet-based CBT for elderly PTSD patients with war-associated childhood trauma. On the primary outcome, we found a significant decrease of PTSD symptoms in the treatment group with a moderate between-group effect size in favor of the treatment group compared with the waitlist control group (WL). PTSD overall symptom severity in the WL remained largely unchanged, whereas overall symptom severity in the treatment group had decreased significantly with a moderate-to-large effect. Looking at the stability of the decrease in the treatment group, no significant changes could be observed at all follow-up measurements.

Regarding the PTSD intrusion symptoms, which did not decrease during treatment, a significant decrease with a large clinical meaningful effect in the follow-up measurements was observed. A possible explanation for the unchanged symptoms right after the treatment could be related to the last treatment phase itself in which participants are instructed to reflect their trauma with regard to feelings of guilt, shame, and fear as well as to challenge dysfunctional thinking. A result of this reflection might be a recollection of intrusive thoughts, which then decreased in the aftermath of the treatment.

Overall, these main outcome results provide preliminary support for the efficacy of Integrative TT in



reducing PTSD in older persons, and extend the results of our pilot study.<sup>19</sup> For the special cohort of older adults, these results also extend the finding that psychological interventions are effective for this age group (face-to-face treatment: meta-analysis,<sup>33</sup> Internet-based treatment: RCTs<sup>16,17</sup>).

With regard to the secondary outcomes of anxiety and depressive symptoms, contrary to our hypotheses, no significant changes were observed, although the literature has reported decreases in anxiety and depression in an adult PTSD sample.<sup>34</sup> Nevertheless, the level of anxiety and depression at baseline was very low (i.e., under the cutoff score of 1.75), which is not indicative of clinically significant distress in the sample. Research with other samples of German World War II survivors also indicates low levels of depressive and anxiety symptoms,<sup>35,36</sup> which might point to a specificity of the subgroup. Therefore, no comorbidity with typical trauma-related mental symptoms could be identified that is contrary to the literature.<sup>2,12</sup>

Integrative TT was associated with a significant increase in quality of life and self-efficacy from pre- to post-treatment with moderate within-effect sizes. These increases remained stable at the 12-month follow-up (i.e., there were no significant changes from post-treatment to 12-month follow up). The finding that Integrative TT was associated with an improvement in quality of life is consistent with findings from an Internet-based RCT for Arabic-speaking PTSD patients.<sup>34</sup> With regard to self-efficacy, the finding extends prior work that showed a change of coping self-efficacy in Internet-based RCTs for PTSD.<sup>37,38</sup> We hypothesized that the reported changes are likely caused by the use of biographical reconstruction, which directly focuses on resources and experiences of control as well as the cognitive reappraisal; these allow for the recognition of the achievements of a patient's life. Overall, this constructive focus on Internet-based interventions for PTSD is relatively scarce, and therefore should be focused in more detail in future research to be able to examine effective treatment components.

Results of this study also support the feasibility of Integrative Testimonial Therapy, as evidenced by a low attrition rate and high working alliance. Compared with other Internet-based interventions, attrition rates of the current study were very low. In a meta-analysis, Kuester and colleagues<sup>14</sup> report an overall attrition rate for Internet-based CBTs ranging from 16.5% (passive

comparison condition) to 23.2% (treatment group). The low attrition rate observed in the current study indicates that patients seemed to be engaged to work with as well as to actively use the new media approach. Given this, the high level of working alliance at the end of the treatment further demonstrates the feasibility of this Internet-based CBT and the use of a high-intensity therapist-guided approach. The levels of working alliance were comparable to face-to-face interventions<sup>39</sup> and consistent with findings of recent reviews suggesting that it is possible to achieve high therapeutic alliance in Internet-based interventions.<sup>40</sup>

To our knowledge, this is the first RCT for PTSD in older adults. The results are promising and extend the current literature in several aspects. First, the sample consists of patients over 60 years who are in general a hard-to-reach population for psychotherapy. Second, the study focuses not only on psychopathology but also on resource-oriented variables, which allow a broader perspective on mental health. Third, the 12-month follow-up assessment allows preliminary conclusions about the long-term effects of Internet-based CBT.

Despite these strengths, the study has a number of limitations, which should be taken into consideration when interpreting the results and offer directions for future research. First, the design including a wait-list control group, and thus no conclusions could be drawn for the efficacy of the treatment components. Here, dismantling designs varying the distinct treatment components would be useful. Also, the study does not have a control group at follow-up assessments. After so many decades, however, it could be assumed that the decrease of PTSD symptoms as well as the symptom stability can be attributed to the treatment. Second, the clinical assessments were all based on self-reports, although all questionnaires have been applied in numerous studies and validated with good psychometric properties. For a broader clinical perspective as well as for the possibility to confirm diagnosis, the additional use of clinical interviews is needed. Third, the sample of patients was very homogeneous with regard to the time of traumatization. On the one hand, this was an advantage with regard to the consistent life phase in which the trauma happened. On the other hand, conclusions about the generalizability in treating other populations may be limited. Additional studies examining the efficacy of Integrative Testimonial Therapy in older adults with recent traumatization

are needed. Furthermore, the small sample size in each group prevented the examination of analyses of possible effects of particular patient characteristics on study outcomes.

To conclude, this RCT provides support for the efficacy and feasibility of Integrative Testimonial Therapy in treating PTSD symptoms and increasing quality of life and self-efficacy in older adults with child trauma-related PTSD symptoms. Therefore, the presented intervention opens up a possibility to close the gap between the use of psychological interventions and mental suffering in older trauma survivors. In addition, results revealed that the effects could be achieved within a short time period indicating a potential for a reasonable cost-effectiveness. Combined with its

limitations, however, further studies are needed to extend the current findings. With further evidence, this Internet-based intervention could be fit nicely in a stepped-care approach, as older patients who are not able to visit a psychotherapist (e.g., because of immobility,) have access to a specialized trauma-focused psychotherapy. Especially in the light of long-lasting consequences of war-associated traumatic events, a low-threshold age-specific treatment approach for the cohort of older adults seems to be essential in future.

*The authors have no disclosures to report.*

*Presented in part at the International Society for Traumatic Stress Studies (ISTSS) meeting, Los Angeles, CA, November 2012.*

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